

Remarks

Reconsideration of the application and allowance of all pending claims are respectfully requested. Claims 1, 3, 10-22 and 49 remain pending.

In the Office Action, dated March 25, 2008, claims 1, 21 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voll et al. (U.S. Patent No. 5,551,028); claims 3, 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voll in view of Soltis et al. (U.S. Patent No. 6,493,804); claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voll in view of Soltis and further in view of Shaughnessy (U.S. Patent No. 5,555,388); and claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voll in view Soltis and further in view of Annevelink (U.S. Patent No. 5,448,727). Applicants respectfully, but most strenuously, traverse these rejections for the reasons herein.

In one aspect, applicants' invention is directed to the efficient locking of resources of a global data repository. A locking facility is provided that enables concurrent access to a complex data structure, while minimizing the lock acquisition necessary to access a particular resource of that complex data structure. As one example, the complex data structure is a data repository that includes a plurality of resources (e.g., tables, directories). The repository has a hierarchical topology and includes, in one example, resources that are dependently sequenced, in that one resource, such as Resource X, is accessed through another resource, such as Resource Y. There are also various relationships among the resources of the repository and the locks of the repository. As examples, the relationships of the resources include containment-based relationships and reference-based relationships. A containment-based relationship is a relationship in which there is exactly one reference from instances of a resource, such as Resource X, to an instance of another resource, such as Resource Y. On the other hand, a reference-based relationship is one in which there may be more than one reference from instances of a resource, such as Resource X, to an instance of another resource, such as Resource Y.

The type of locking relationship that exists depends on the particular relationship between the resources. For example, if the relationship between the resources is a

containment-based relationship, then the locking acquisition is referred to as chained locking. On the other hand, if the relationship is a reference-based relationship, then the locking acquisition is referred to as a reference-based locking strategy. To minimize the locking needed, the locking strategy selected for a particular resource depends on the relationship between the resource and at least one other resource. This is explicitly claimed by applicants.

For example, in independent claim 1, applicants recite a method of managing the locking of resources of a data repository, in which the method includes, for instance, having a data repository including a hierarchical structure of a plurality of dependently sequenced resources, the hierarchical structure including one or more resources having a reference-based relationship and one or more resources having a containment-based relationship; determining whether a relationship between one resource and another resource of the data repository is a containment-based relationship or whether the relationship is a reference-based relationship, wherein the relationship between the one resource and the another resource is a containment-based relationship, if the one resource is accessed through the another resource, and if there is only one reference from instances of the one resource to the another resource, and the relationship between the one resource and the another resource is a reference-based relationship, if the one resource is accessed through the another resource and if there are more than one references from instances of the one resource to the another resource; locking at least one resource of the one resource and the another resource using a chained locking strategy, in response to the determining indicating the relationship is a containment-based relationship; and locking at least one resource of the one resource and the another resource using a reference-based locking strategy, in response to the determining indicating the relationship is a reference-based relationship, wherein a chained locking strategy is a different locking strategy than a reference-based locking strategy.

Thus, in one aspect of applicants' claimed invention, a determination is made as to whether the relationship between one resource and another resource is a containment-based relationship or a reference-based relationship. That is, a determination is made as to whether there is only one reference from instances of the one resource to another resource, or whether there may be multiple references from instances of the one resource to another resource. If

the determining indicates that the relationship is a containment-based relationship, at least one of the resources is locked using a chained locking strategy. Further, if the determining indicates that the relationship is a reference-based relationship, at least one of the resources is locked using a reference-based locking strategy. This is not described, taught or suggested in Voll.

While Voll mentions containment, reference and locking, Voll does not correlate the type of locking strategy used based on the type of relationship. That is, there is no description, teaching or suggestion in Voll of locking a resource using a particular locking strategy based on whether the relationship is determined to be a containment-based relationship or a reference-based relationship, as claimed by applicants. Voll does mention a lock status of the object, but that lock status merely indicates whether the object is locked or accessed (see col. 10, lines 46-67). It further states whether the lock type is exclusive or shared (see col. 15, lines 45-60). There is, however, no description in Voll of selecting the type of locking strategy based on whether the determined relationship is a containment-based relationship or a reference-based relationship. There is no description, teaching or suggestion in Voll of using a chained locking strategy to lock a resource, if it is determined that the relationship is a containment-based relationship, and using a reference-based locking strategy to lock a resource, if the determining indicates that the relationship is a reference-based relationship, as explicitly claimed by applicants. This is missing from Voll.

Since Voll is missing at least the above claimed feature, applicants respectfully submit that their invention is patentable over Voll. Further, the other cited art does not overcome the deficiencies of Voll.

Based on the foregoing, applicants respectfully request an indication of allowability for independent claim 1. Further, the dependent claims are patentable for the same reasons as the independent claims, as well as for their own additional features. Thus, applicants respectfully request an indication of allowability for all pending claims.

Should the Examiner wish to discuss this case with applicants' attorney, please contact applicants' attorney at the below listed number.

Respectfully submitted,

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